

CLAIMS

WHAT IS CLAIMED IS:

1. A pipe coupling for joining two portions of a pipe, the pipe coupling comprising:
 - an inlet portion;
 - an outlet portion disposed opposite the inlet portion;
 - an intermediate portion disposed between the inlet and outlet portions for providing relative movement between the inlet portion and the outlet portion;
 - the intermediate portion having a plurality of corrugations disposed about a circumference of the pipe coupling, each corrugation having first and second ends;
 - each corrugation disposed at an angle substantially perpendicular to maximum tensile stresses imposed on the pipe;
 - the first and second ends of each corrugation terminating at a transition area where each said end blends with the inlet portion and outlet portion, respectively; and
 - the transition area forming a smooth curve defined by a second order or third order function, the transition area extending from an axis of each corrugation to either a longitudinal axis of the pipe coupling or an axis perpendicular to the axis of the pipe coupling.
2. The pipe coupling according to claim 1 wherein the smooth curve is in the form of an ellipse.
3. The pipe coupling according to claim 1 wherein the smooth curve is circular.
4. The pipe coupling according to claim 1 wherein a shape of the transition area forms a smooth curve that is approximated by a circle.
5. The pipe coupling according to claim 1 wherein a shape of the transition area forms a smooth curve that is approximated by one of a plurality of graduated radii.

6. The pipe coupling according to claim 1 wherein a shape of the transition area forms a smooth curve that is approximated by one of a plurality of graduated radii and straight segments.

7. A pipe coupling for joining two portions of a pipe, the pipe coupling comprising:

- an inlet portion;
- an outlet portion disposed opposite the inlet portion;
- an intermediate portion disposed between the inlet and outlet portions for providing relative movement between the inlet portion and the outlet portion;
- the intermediate portion having a plurality of corrugations disposed about a circumference of the pipe coupling;
- each corrugation having first and second arms diverging from a common vertex toward the inlet portion and outlet portion, respectively;
- each arm disposed at an angle substantially perpendicular to maximum tensile stresses imposed on the pipe;
- each arm terminating at a transition area where each arm of the corrugation blends with the inlet portion and outlet portion, respectively; and
- the transition area forming a curve described by a second order or third order function, the curve extending from an axis of each arm to either a longitudinal axis of the pipe coupling or an axis perpendicular to the axis of the pipe coupling.

8. The pipe coupling according to claim 7 wherein each corrugation is parallel to an adjacent corrugation and wherein the plurality of corrugations are disposed continuously around a circumference of the pipe coupling.

9. The pipe coupling according to claim 7 wherein each corrugation is not parallel to an adjacent corrugation and wherein the plurality of corrugations are disposed continuously around a circumference of the pipe coupling.

10. The pipe coupling according to claim 7 wherein the smooth curve is in the form of an ellipse.

11. The pipe coupling according to claim 7 wherein the smooth curve is circular.

12. The pipe coupling according to claim 7 wherein a shape of the transition area forms a smooth curve that is approximated by a circle.

13. The pipe coupling according to claim 7 wherein a shape of the transition area forms a smooth curve that is approximated by one of a plurality of graduated radii.

14. The pipe coupling according to claim 7 wherein a shape of the transition area forms a smooth curve that is approximated by one of a plurality of graduated radii and straight segments.